

## CLAIMS

1. A radio system comprising:

5 a radio transmission apparatus comprising a transmission section that transmits a radio signal in which a modulation signal having no signal on a center frequency and a pilot signal having a center frequency identical to said center frequency are multiplexed; and

a radio reception apparatus comprising:

10 an antenna that receives said radio signal;  
a first distribution section that distributes the received signal received at said antenna to two directions;

15 an extraction section that extracts a signal component corresponding to said pilot signal from one received signal distributed by said first distribution section;

20 a second distribution section that distributes a local oscillation signal from a local oscillation signal generation section to two directions;

a first frequency multiplication section that performs frequency conversion on said signal component corresponding to said extracted pilot signal using the one local oscillation signal distributed by said second distribution section;

25 a first delay addition section that gives a delay to the other received signal distributed by

said first distribution section;

a second frequency multiplication section that frequency-multiplies said signal component corresponding to said pilot signal subjected to frequency conversion in said first frequency multiplication section by said other received signal to which the delay has been added in said first delay addition section;

a second delay addition section that gives a delay to the other local oscillation signal distributed by said second distribution section; and

a quadrature demodulation section that frequency-multiplies the received signal after frequency multiplication in said second frequency multiplication section by said other local oscillation signal to which the delay has been added in said second delay addition section, and performs quadrature demodulation.

2. A radio reception apparatus comprising:

an antenna that receives a radio signal in which a modulation signal having no signal on a center frequency and a pilot signal having a center frequency identical to said center frequency are multiplexed;

a first distribution section that distributes the received signal received at said antenna to two

directions;

an extraction section that extracts a signal component corresponding to said pilot signal from one received signal distributed by said first distribution  
5 section;

a second distribution section that distributes a local oscillation signal from a local oscillation signal generation section to two directions;

a first frequency multiplication section that  
10 performs frequency conversion on said signal component corresponding to said extracted pilot signal using the one local oscillation signal distributed by said second distribution section;

a first delay addition section that gives a delay  
15 to the other received signal distributed by said first distribution section;

a second frequency multiplication section that frequency-multiplies a signal component corresponding to said pilot signal subjected to frequency conversion  
20 in said first frequency multiplication section by said other received signal to which the delay has been added in said first delay addition section;

a second delay addition section that gives a delay to the other local oscillation signal distributed by said  
25 second distribution section; and

a quadrature demodulation section that frequency-multiplies the received signal after frequency

multiplication in said second frequency multiplication section by said other local oscillation signal to which the delay has been added by said second delay addition section, and performs quadrature demodulation.

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3. The radio reception apparatus according to claim 2, further comprising an amplification section that amplifies said one received signal distributed by said first distribution section, and outputs the amplified  
10 signal to said extraction section.

4. The radio reception apparatus according to claim 2, further comprising:

a reception power calculation section that  
15 calculates a reception power value of said received signal based on an amplitude of the output signal of said quadrature demodulation section;

a first variable gain amplification section that is disposed before said first frequency multiplication  
20 section, and amplifies said signal component corresponding to said pilot signal extracted by said extraction section according to said reception power value; and

a second variable gain amplification section that  
25 is disposed before said quadrature demodulation section, and amplifies the signal after frequency-multiplication in said second frequency multiplication section according

to said reception power value.

5. The radio reception apparatus according to claim 2, further comprising:

5 a reception power calculation section that calculates a reception power value of said received signal based on the amplitude of the output signal of said quadrature demodulation section; and

a variable gain amplification section that is  
10 disposed before said first distribution section, and amplifies said received signal according to said reception power value.

6. The radio reception apparatus according to claim  
15 2, further comprising:

a reception power calculation section that calculates a reception power value of said received signal based on the amplitude of the output signal of said quadrature demodulation section; and

20 amount of delay calculation section that calculates an amount of delay based on said reception power value, wherein said first delay addition section and said second delay addition section change delays to be added based on said amount of delay.

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7. The radio reception apparatus according to claim 2, wherein said quadrature demodulation section is used

as another frequency multiplication section that frequency-multiplies the output signal of said second frequency multiplication section by the output signal of said second delay addition section.

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8. The radio reception apparatus according to claim 2, further comprising:

a reception power calculation section that calculates a reception power value of said received signal based on the amplitude of the output signal of said quadrature demodulation section; and

a variable gain amplification section that amplifies the signal subjected to quadrature modulation by quadrature demodulation section according to said reception power value.

9. The radio reception apparatus according to claim 2, further comprising a band limiting filter that is disposed before said first delay addition section, and removes a signal component corresponding to a pilot signal having a center frequency identical to the center frequency of said other received signal distributed by said first distribution section from said other received signal.

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